

What is claimed:

1. A process for hydrocyanation of at least one substrate selected from the group consisting of 2-pentenenitrile, 3-pentenenitrile, 4-
5 pentenenitrile, and 2-methyl-3-butenitrile comprising contacting the substrate with hydrogen cyanide in the presence of a zero-valent nickel hydrocyanation catalyst and a promoter, wherein said promoter is obtained as a byproduct from a method for producing titanium tetrachloride from titanium ore, said method comprising the steps of
10 contacting a titanium-containing ore with chlorine under reducing conditions to obtain a gaseous reaction product, recovering titanium tetrachloride from the reaction product, thereby leaving behind a residue, and condensing the residue to obtain a byproduct that comprises at least one compound selected from the group consisting of iron (II) chloride, and
15 manganese (II) chloride.